

## METHOD AND APPARATUS FOR ESTIMATING PHYSIOLOGICAL PARAMETERS USING MODEL-BASED ADAPTIVE FILTERING

### ABSTRACT OF THE DISCLOSURE

5           A method and apparatus for reducing the effects of noise on a system for measuring physiological parameters, such as, for example, a pulse oximeter. The method and apparatus of the invention take into account the physical limitations on various physiological parameters being monitored when weighting and averaging a series of measurements. Varying weights are assigned different measurements, measurements  
10           are rejected, and the averaging period is adjusted according to the reliability of the measurements. Similarly, calculated values derived from analyzing the measurements are also assigned varying weights and averaged over adjustable periods. More specifically, a general class of filters such as, for example, Kalman filters, is employed in processing the measurements and calculated values. The filters use mathematical  
15           models which describe how the physiological parameters change in time, and how these parameters relate to measurement in a noisy environment. The filters adaptively modify a set of averaging weights to optimally estimate the physiological parameters.